

WEST Search History

DATE: Thursday, January 05, 2006

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<i>DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L27	L26 and coat\$ and film	8
<input type="checkbox"/>	L26	L24 and alkoxysilane	8
<input type="checkbox"/>	L25	L24 and oxysilane	0
<input type="checkbox"/>	L24	L23 and perfluoro\$alkyl	29
<input type="checkbox"/>	L23	L22 and perfluoro\$	79
<input type="checkbox"/>	L22	(silane or siloxane) and Kevlar	561
<input type="checkbox"/>	L21	perfluoroalkylethyltris\$ and (silane or siloxane) and Kevlar	0
<input type="checkbox"/>	L20	perfluoroalkylethyltris\$ or (2-(2-(2-methoxyethoxy)ethoxy)ethoxy)silane	3
<input type="checkbox"/>	L19	perfluoroalkylethyltris(2-(2-methoxyethoxy)ethoxy)silane	2
<input type="checkbox"/>	L18	L17 and film	11
<input type="checkbox"/>	L17	L16 and water	11
<input type="checkbox"/>	L16	L14 and alkoxy\$silane	11
<input type="checkbox"/>	L15	L14 and perfluoro\$silane	0
<input type="checkbox"/>	L14	L13 and perfluoro\$	59
<input type="checkbox"/>	L13	L12 and coat\$	397
<input type="checkbox"/>	L12	(Kevlar or Twaron) and silane	472
<input type="checkbox"/>	L11	L10	6
<i>DB=PGPB,USPT,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L10	L9 and perfluoro\$ and silane	11
<input type="checkbox"/>	L9	p-phenylene same (fiber or fabric or textile)	1627
<input type="checkbox"/>	L8	L2 and terephthal\$amide	0
<input type="checkbox"/>	L7	L2 and terephthalamide	0
<input type="checkbox"/>	L6	L2 and p-phenylene	5
<input type="checkbox"/>	L5	L2 and L3	0
<input type="checkbox"/>	L4	L3 and L2	0
<input type="checkbox"/>	L3	p-phenylene terephthalamide	1311
<input type="checkbox"/>	L2	L1	690
<i>DB=PGPB,USPT,EPAB,JPAB; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L1	perfluoro\$silane	690

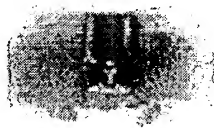
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Gemini HR nano Rheometer



From **Malvern Instruments**



Supplier Data

Polyaramid Polyparaphenylene Terephthalamide (Kevlar / Twaron) – Properties and Applications - Supplier Data by Goodfellow

Topics Covered

[Background](#)
[Key Properties](#)
[Applications](#)

Background

An infusible, wholly aromatic polymer that can strictly be described as nylon T,T - but rarely is. Manufactured only as a fibre (by solution spinning), it has a very high thermal stability and temperature and flame resistance. In contrast to its chemical isomer Nomex®, its tensile properties are up to an order of magnitude greater than those of normal textile fibres, because of a high degree of molecular orientation resulting from its stiff linear molecules and their propensity for forming liquid crystals in the spinning solution. In common with the small number of other highly oriented materials, these fibres have a (small) negative co-efficient of thermal expansion in the axial direction.

Key Properties

Chemical Resistance

Acids - concentrated	Poor
Acids - dilute	Fair
Alcohols	Good
Alkalis	Good
Aromatic hydrocarbons	Good
Greases and Oils	Good
Halogens	Good
Ketones	Good

Mechanical Properties

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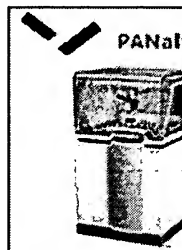
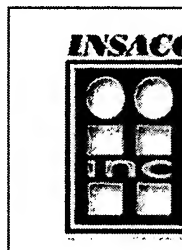
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Tensile modulus (GPa)	59-124
Tensile strength (MPa)	2760

Physical Properties

Density (g.cm ⁻³)	1.44
Resistance to Ultra-violet	Fair

Thermal Properties

Coefficient of thermal expansion (x10 ⁻⁶ K ⁻¹)	-2 along axis
Lower working temperature (°C)	-200
Specific heat (J.K ⁻¹ .kg ⁻¹)	1400
Thermal conductivity (W.m ⁻¹ .K ⁻¹)	0.04 @ 23
Upper working temperature (°C)	180- 245

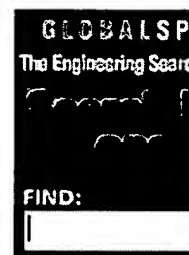
Properties Polyaramid Fibre

Property		Value		
Material		Kevlar 29®	Kevlar 49®	Kevlar Ht (T129)
Specific Modulus	cN/tex	4000	8300	5200
Specific Tenacity	cN/tex	190	190	235
Density	g.cm ⁻³	1.44	1.45	1.44
Extension to break	%	3.7	1.9	3.6
Modulus	GPa	58	120	75
Shrinkage @100°C	%		0.02	
Tenacity	GPa	2.76	2.76	3.32

Applications

Quite widely used in composites which are lighter than those based on carbon fibre and electrically insulating. Their mechanical properties are generally inferior; more specifically they have a high specific tensile strength approaching that of carbon fibre composites, but quite low strength in compression.

In addition to composites, applications include protective clothing and body armour, friction products, elastomer reinforcement (e.g. hoses and drive belts), ropes and cords and as high strength high modulus fabrics e.g. high performance sailcloths.



Source: Goodfellow

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